United States Patent [19]

Kitchens

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[54] **RETROFIT SPRINKLER SYSTEM**

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[73] Assignee: **Peachtree Interior Builders, Ltd.,** Norcross, Ga.

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[51] **Int. Cl.**[4] **B05B 15/06;** E04B 5/48

[52] **U.S. Cl.** **239/283;** 52/220

[58] **Field of Search** 239/208, 209, 282, 283; 169/41, 51; 52/220, 221; 248/65, 74.1; 312/209

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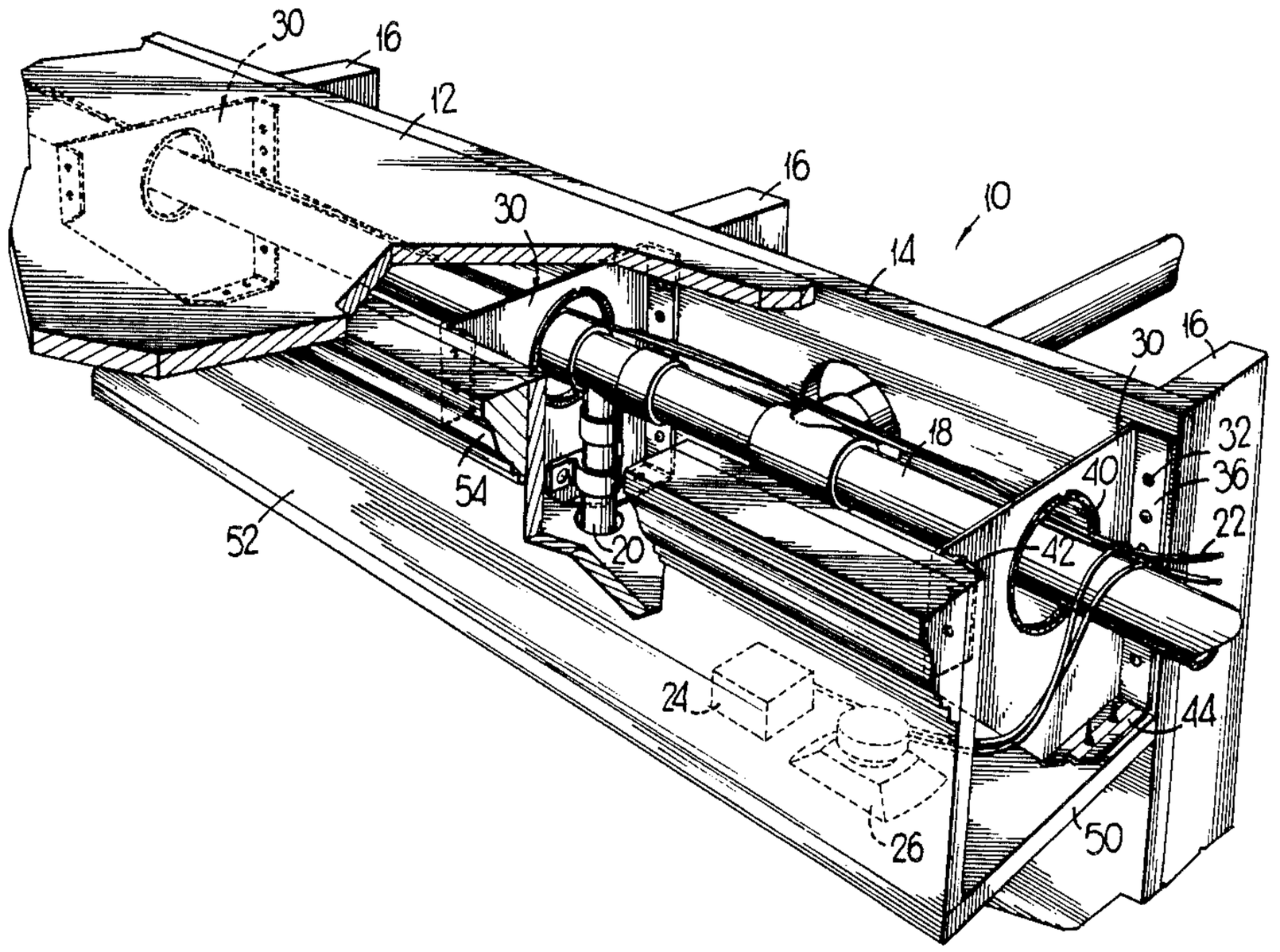
[57] **ABSTRACT**

A retrofit sprinkler system is installed into existing structures by means of a bracket which is mounted on the existing walls adjacent the ceiling to support flexible sprinkler pipe and related utilities. The bracket has a wall-mounting flange, front and bottom flanges for mounting a facade and soffit, and a central support opening. The support opening may be a closed circle or an open J-shape. In one embodiment the front flange may be adjustable toward and away from the existing wall to correct for irregularities in the existing wall.

2 Claims, 2 Drawing Sheets



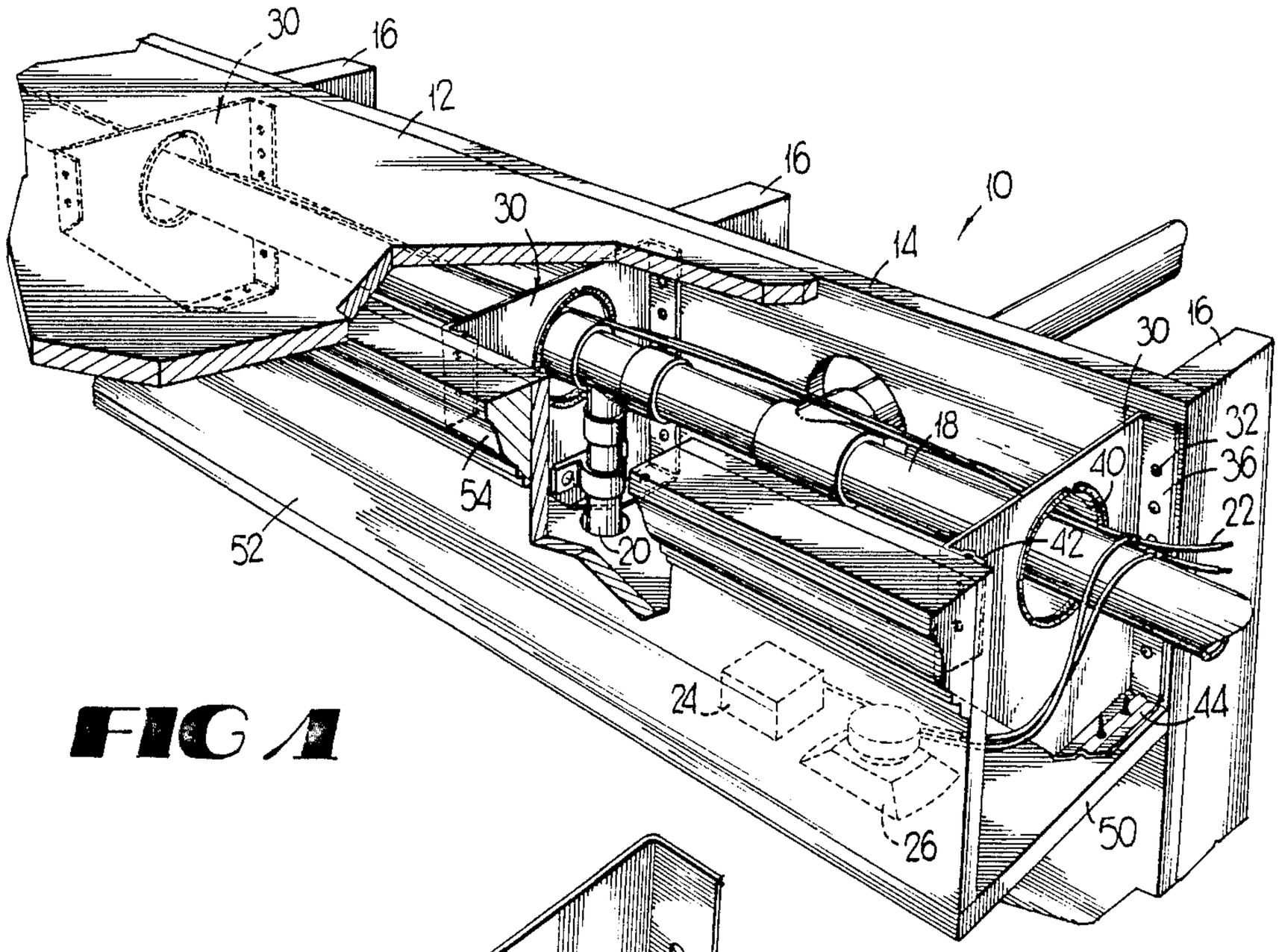

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FIG 1

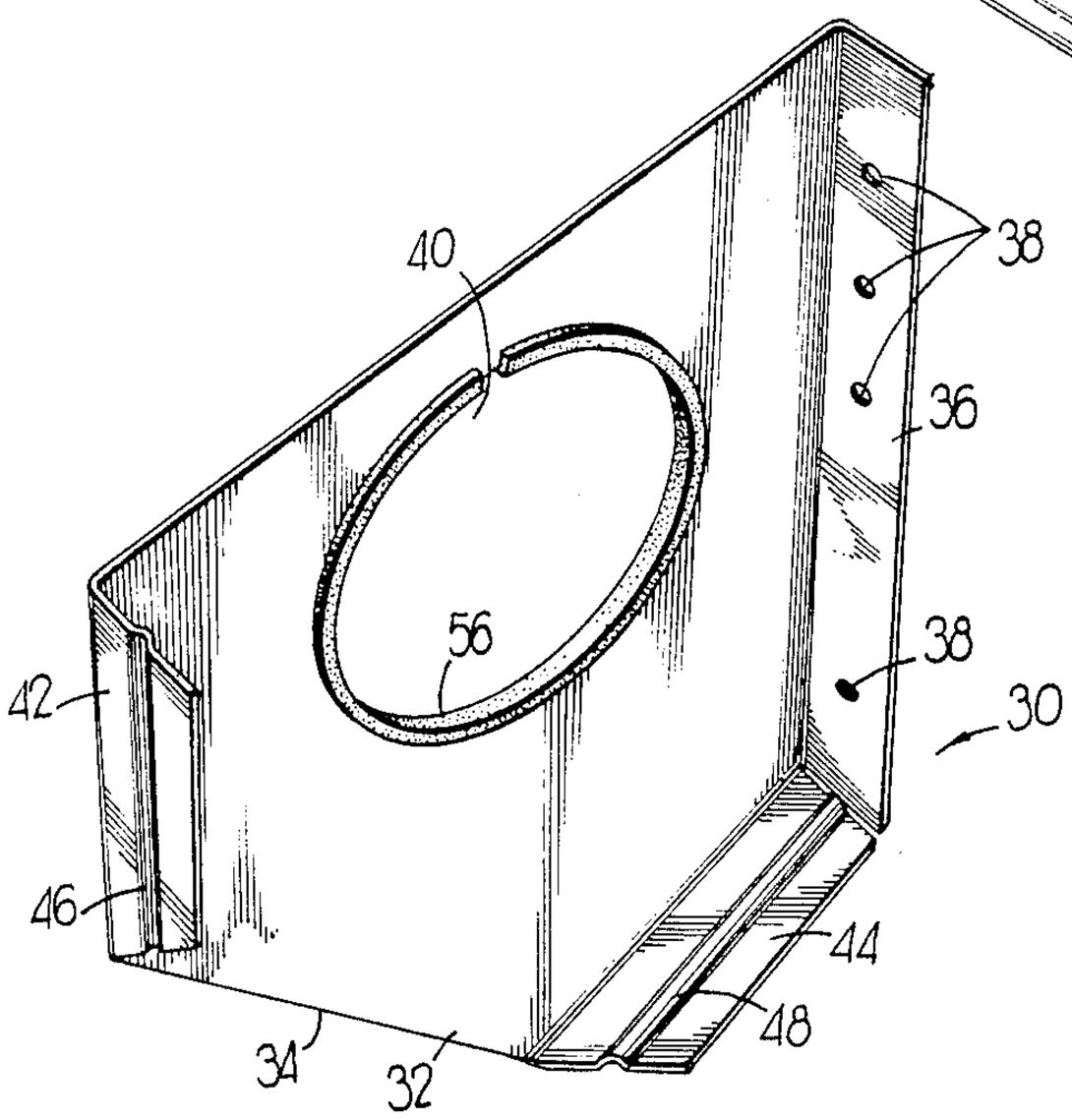
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FIG 2

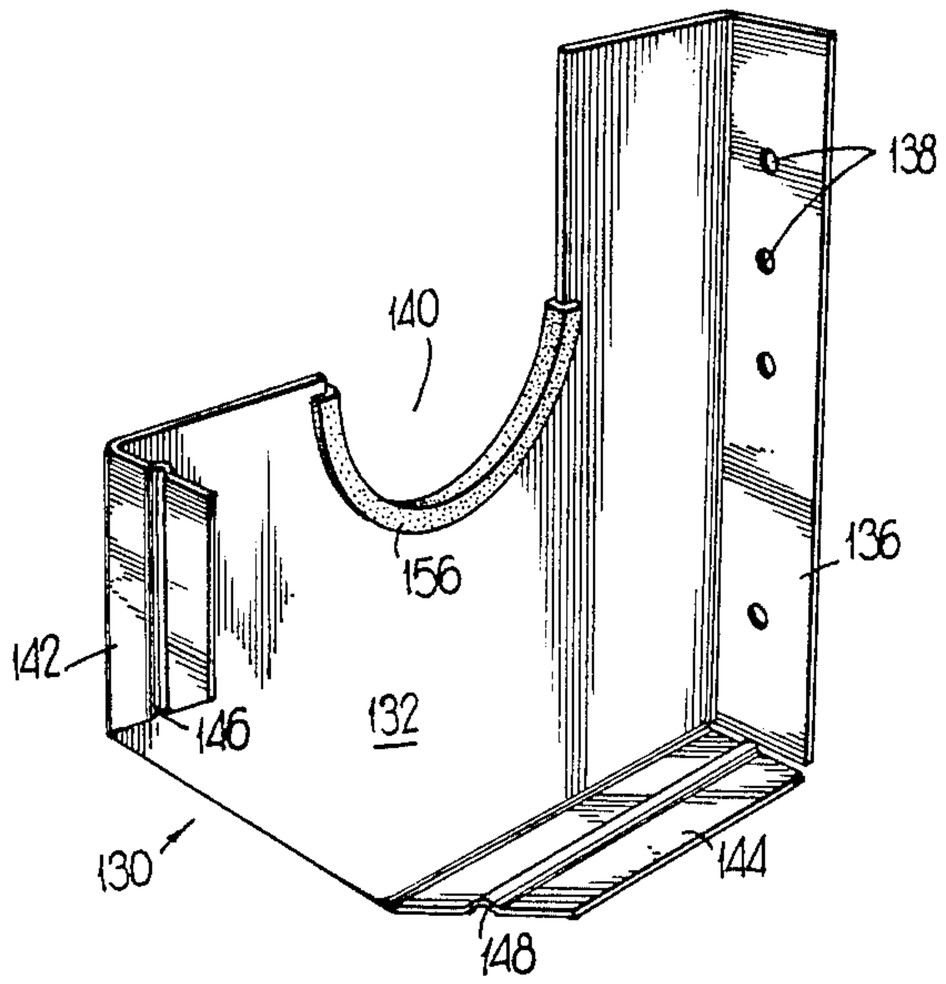
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FIG 3

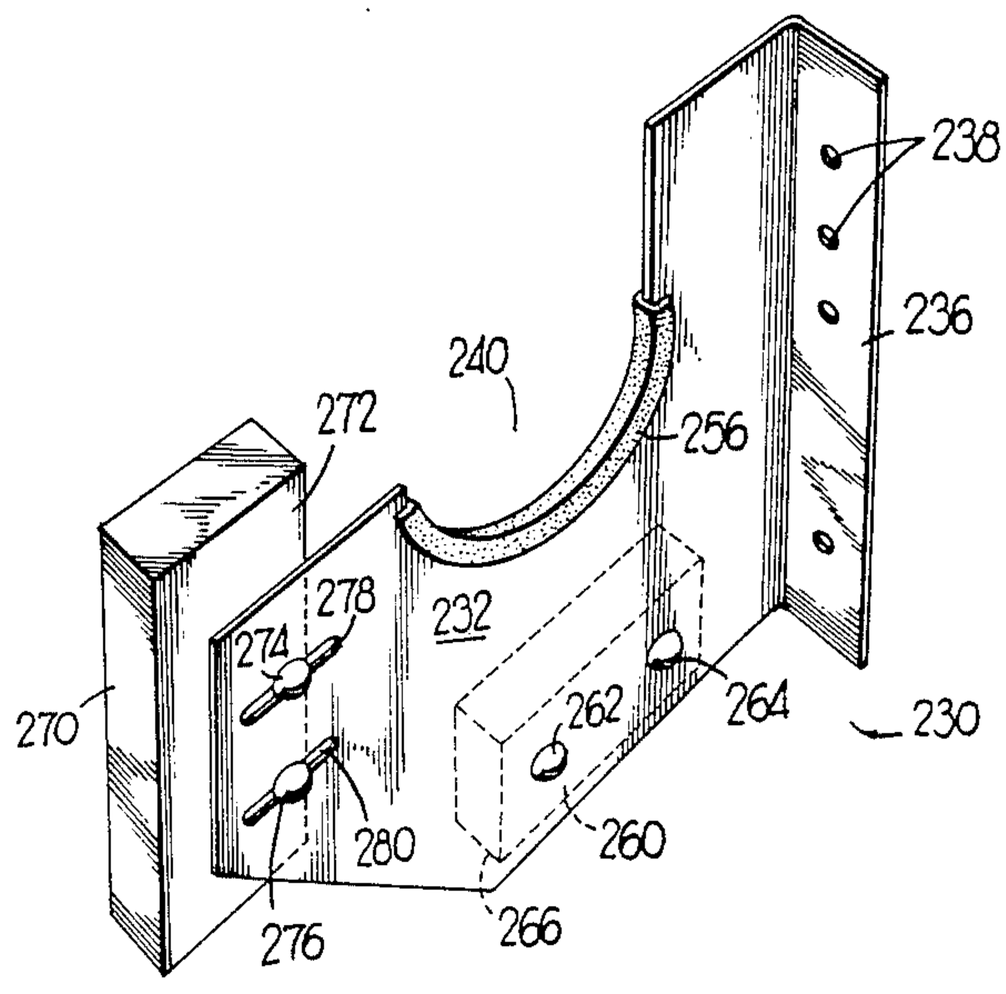
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FIG 4

RETROFIT SPRINKLER SYSTEM

BACKGROUND OF THE INVENTION

This invention relates generally to a fire protection sprinkler system, and more particularly concerns a sprinkler system which is retrofit into an existing building without the necessity of major renovation.

Over the past several years many states and municipalities have passed ordinances requiring the installation of fire protection sprinkler systems in high rate of occupancy buildings such as hotels, apartment buildings, and office buildings. Because such buildings have high rates of occupancy, it is important to the owners of such buildings that the installation of a retrofit sprinkler system not interfere with the continuing occupancy of the building during the installation.

In the past, sprinkler systems have been retrofit into buildings by simply removing portions of walls and ceilings and installing the necessary piping, sprinkler heads, wires, detectors, and alarms in the walls and ceilings and then replacing the walls and ceilings. Such work entails a substantial amount of dust, dirt, and noise thereby often rendering the portions of the building being retrofit uninhabitable during the retrofit process.

In order to alleviate the problems of such retrofit installation, sprinkler systems have been installed within cover-up boxes running along the corner of a hallway between the wall and ceiling. Such a procedure, while less expensive and disruptive than removal of walls and ceilings for access, still has required a substantial amount of construction work and disruption. Particularly, such cover-up boxes generally require that the piping for the sprinkler system first be installed by means of hangers attached to the ceiling of the hallway. Once the pipes and associated sprinkler heads, wires, detectors, and alarms have been installed from the ceiling hangers, then carpenters are required to install nailer strips along the ceiling and along the wall to provide support for the cover-up box which generally must be comprised of wooden boards or panels to insure nailability and a certain degree of integrity. The necessity of using wooden boards or panels along with the accompanying skilled carpentry labor obviously results in a substantial cost in installing the cover-up boxes for concealing the sprinkler system.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide an improved retrofit sprinkler system including the necessary cover-up boxes to hide the pipes, sprinkler heads, wires, detectors, alarms, and related utilities which are part of the retrofit sprinkler system.

It is likewise an object of the present invention to provide a retrofit sprinkler system which allows simple installation and which allows the contractor to use sheetrock or similar material to form the cover-up box instead of wooden boards or panels.

The foregoing objectives are accomplished by a retrofit sprinkler system which utilizes flexible pipe and is installed by means of a unique bracket, a number of which are attached to the walls adjacent the ceiling at spaced intervals, typically at the locations of the wall studs. The bracket has a planar rear flange so that it can be nailed or screwed to the wall. The bracket has a central support opening for containing and supporting the sprinkler pipe, wires, and other related utilities. The bracket also has a planar front mounting surface and a planar bottom mounting surface which allows the contractor to attach a facade of sheetrock or other similar materials to the front mounting surface of the bracket and a soffit of sheetrock or other similar material to the bottom mounting surface of the bracket to form a cover-up box.

In one preferred embodiment, the bracket has a J-shaped supporting opening which allows the brackets to be placed on the wall and the pipes and other related utilities to be placed onto the supporting opening from the open front portion of the J-shaped opening.

In another embodiment of the invention, the J-shaped bracket has a block which is adjustably attached to the main portion of the bracket. The block provides a front mounting surface which may be adjusted toward and away from the existing wall in order to compensate for any irregularities in the existing wall.

Other objects and advantages of the present invention will become apparent upon reading the following detailed description and upon reference to the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view with certain portions of the facade and soffit cut away to show the sprinkler system of the present invention;

FIG. **2** is an enlarged perspective view of one bracket which is useful in connection with the present invention;

FIG. **3** is an enlarged perspective view of a second bracket which is useful in connection with the present invention; and

FIG. **4** is an enlarged perspective view of a third bracket which is useful in connection with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

While the invention will be described in connection with a preferred embodiment, it will be understood that we do not intend to limit the invention to that embodiment. On the contrary, we intend to cover all alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning to FIG. **1**, there is shown a retrofit sprinkler system **10** which is installed along the junction between an existing ceiling **12** and an existing wall **14**. In many existing high-occupancy structures, the ceiling **12** is formed of reinforced concrete. The existing wall **14** is typically sheetrock nailed or screwed to wood or metal studs **16**.

The retrofit sprinkler system **10** of the present invention allows installation of the necessary sprinkler utilities, i.e. pipe **18**, sprinkler heads **20**, wires **22**, smoke and heat detectors **24**, and alarms **26**, without removal of the existing wall **14** or ceiling **12**. Because the retrofit sprinkler system **10** is mounted onto the existing wall **14**, there is no need to drill holes in the concrete ceiling **12** to support the sprinkler system utilities. It is also preferred that the pipe **18** be Underwriters Laboratory approved polybutylene. Such plastic pipe is flexible, which facilitates installation of the pipe in connection with the use of a unique bracket **30** for mounting the pipes.

The retrofit sprinkler system is mounted onto the existing wall **14** by means of a number of brackets **30**. One embodiment of bracket **30** is shown in FIG. **2**. The

bracket **30** is fabricated of sheet metal or plastic and comprises a central member **32** which is generally rectangular in shape with a corner **34** lopped off. The bracket **30** has a wall-mounting, planar flange **36** along the back of the bracket with mounting holes **38**. As can be seen in FIG. **1**, the bracket **30** is attached to the existing wall **14** by appropriate fasteners, such as nails or screws, inserted through holes **38** to engage studs **16** behind the wall **14**.

The bracket **30** also has a planar front-mounting surface or front flange **42** and a similar planar bottom-mounting surface or bottom flange **44**. The front flange **42** and the bottom flange **44** are integral with central member **32**. The front flange **42** and the bottom flange **44** both have guide channels **46** and **48** respectively which provide centering for self-drilling screws which may be preferably used in attaching the soffit **50** to the bottom flanges **44** and the facade **52** to the front flanges. Once attached, the soffit and facade form a cover-up box for the sprinkler system utilities. Attachment of the facade and soffit may also be accomplished by drilling holes through the soffit and bottom flange and throught the facade and front flange and fastening the facade and soffit to the respective flanges with self-tapping screws.

The brackets **30** provide distributed support for both the facade and soffit along the length of the wall and ceiling junction. Consequently, the facade and soffit do not have to have any more strength than ordinary sheetrock. Likewise, wood or simulated wood paneling can be used without the necessity of additional backing or support beyond that provided by the brackets.

The cover-up box formed by the attached facade and soffit may be finished by adding molding **54** at the junction between the ceiling **12** and the facade **52**. Molding (not shown) may likewise be added along the junciton between the wall **14** and the soffit **50**. Alternatively, the facade and soffit may be prefabricated with the molding attached. In another embodiment the cover-up box may be prefabricated as a single continuous piece for quick installation on the brackets where the existing wall and ceiling are reasonably straight, plumb, and level.

The bracket **30** has a hole **40** in its central member **32**. The hole **40** is lined with a soft grommet **56** which serves to protect the utilities that pass through and are supported within the hole of the bracket **30**.

In an alternative embodiment a bracket **130** in FIG. **3** may be used for the retrofit sprinkler system instead of the bracket **30** shown in FIG. **2**. The bracket **130**, like the bracket **30** (FIG. **2**), has a central member **132** of sheet metal or plastic, integral mounting flange **136** with mounting holes **138**, front flange **142** with fastener guide channel **146**, and bottom flange **144** with fastener guide channel **148**. Bracket **130**, unlike bracket **30**, has a support opening **140** in the shape of the letter J with a protective grommet **156** along its lower curve for supporting the sprinkler system utilities. The bracket **130** with its J-shaped opening **140** provides easy installation of the sprinkler pipe which can be inserted into the opening through the front instead of threading the pipe from bracket to bracket as is required with bracket 30 (FIG. **2**). Consequently, the pipe can be completely assembled on the floor and then lifted into place on the brackets. The flexible plastic pipe further facilitates placing the pre-assembled pipe onto the bracket **130**. The facades and soffits are attached to bracket **130**, as previously described concerning bracket **30** (FIG. **2**).

Another embodiment of the bracket **230** is shown in FIG. **4**. Bracket **230**, like bracket **30** (FIG. **2**), has a central member **232** of sheet metal or plastic and an integral mounting flange **236** with mounting holes **238**. The bracket **230**, like bracket **130** (FIG. **3**), has a J-shaped opening **240** with a protective grommet **256** for supporting the sprinkler utilities. The bracket **230** has a planar bottom mounting surface **266** which is provided by a wood block **260** attached by screws **262** and **264** to the central member **232** adjacent the bottom of the bracket **230**. The wood block **260** provides a mounting surface **266** to which the soffit may be attached by means of a screw or nail. The bracket **230** also has a planar front mounting surface **270** which is provided by wood block **272**. The wood block **272** is secured to the central member **232** by means of screws **274** and **276** which engage slots **278** and **280** respectively in central member **232**. The slots **278** and **280** allow the wood block to be slid toward or away from the existing wall in order to compensate for irregularities in the line of the existing wall. Consequently, the wood block **272** can be adjusted on each bracket **232** mounted on the walls so that the surfaces **270** on each succeeding bracket **280** are coplanar, thus facilitating the attachment of the facade in a straight line.

I claim:

1. A retrofit sprinkler system, comprising:

a. a number of brackets, each comprising a central member having a wall-mounting flange attached thereto for mounting the bracket to a wall adjacent the ceiling, a support opening in the central member, said support opening being J-shaped and oriented for access adjacent the front mounting surface, wherein the front mounting surface is slideably adjustable toward and away from the wall-mounting flange, a planar front mounting surface, and a planar bottom mounting surface;

b. flexible pipe, with sprinkler heads attached thereto and connected to a water source, the flexible pipe being supported in the openings of the brackets;

c. a facade fastened to the front mounting surfaces; and

d. a soffit having sprinkler head openings fastened to the bottom mounting surfaces.

2. The sprinkler system of claim **1**, wherein the facade and soffit are prefabricated together.

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